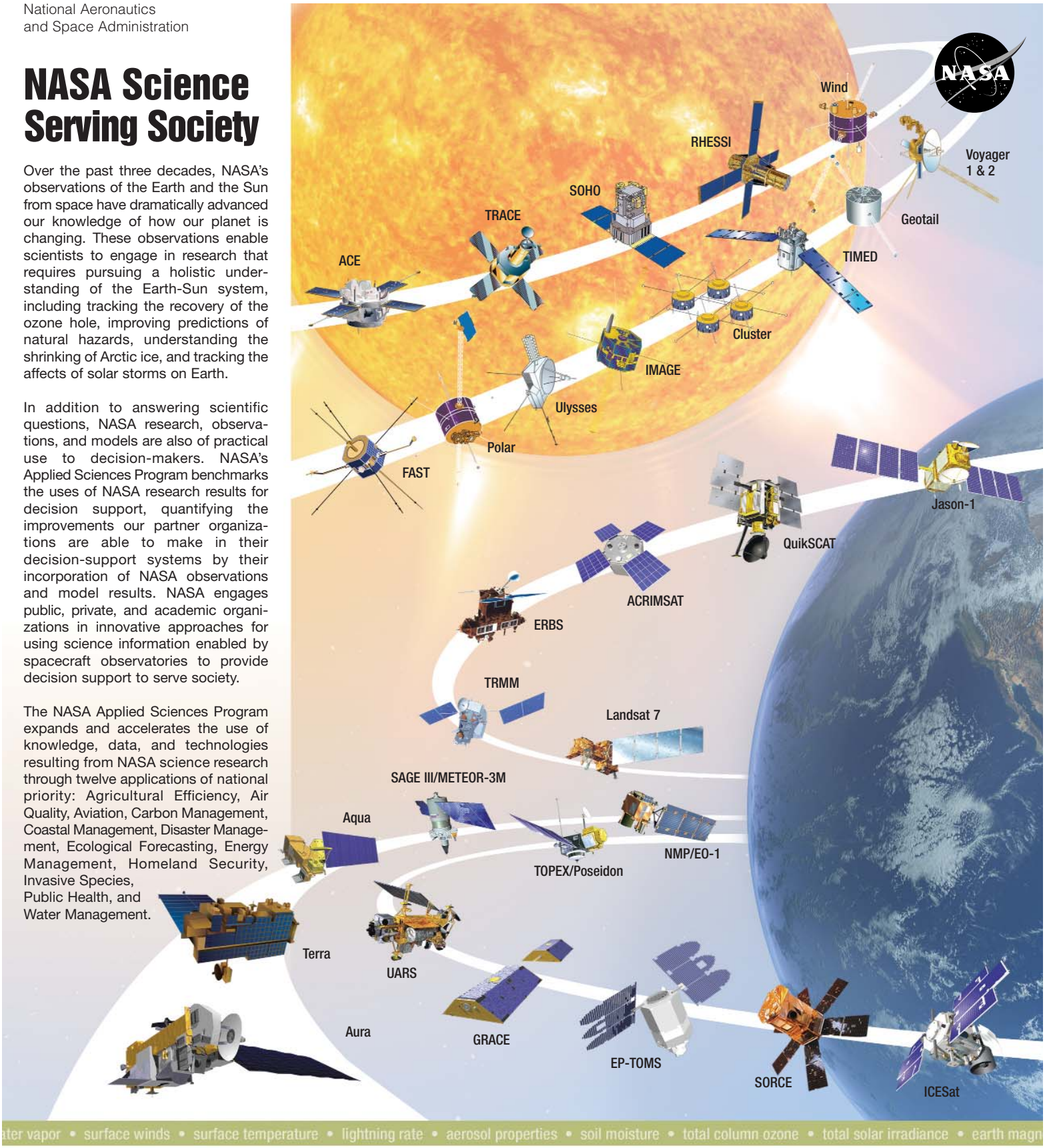
National Aeronautics
and Space Administration

NASA Science Serving Society

Over the past three decades, NASA's observations of the Earth and the Sun from space have dramatically advanced our knowledge of how our planet is changing. These observations enable scientists to engage in research that requires pursuing a holistic understanding of the Earth-Sun system, including tracking the recovery of the ozone hole, improving predictions of natural hazards, understanding the shrinking of Arctic ice, and tracking the affects of solar storms on Earth.

In addition to answering scientific questions, NASA research, observations, and models are also of practical use to decision-makers. NASA's Applied Sciences Program benchmarks the uses of NASA research results for decision support, quantifying the improvements our partner organizations are able to make in their decision-support systems by their incorporation of NASA observations and model results. NASA engages public, private, and academic organizations in innovative approaches for using science information enabled by spacecraft observatories to provide decision support to serve society.

The NASA Applied Sciences Program expands and accelerates the use of knowledge, data, and technologies resulting from NASA science research through twelve applications of national priority: Agricultural Efficiency, Air Quality, Aviation, Carbon Management, Coastal Management, Disaster Management, Ecological Forecasting, Energy Management, Homeland Security, Invasive Species, Public Health, and Water Management.



ater vapor • surface winds • surface temperature • lightning rate • aerosol properties • soil moisture • total column ozone • total solar irradiance • earth magn

Observations

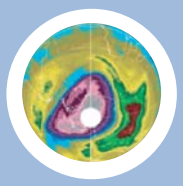
Applied Sciences Program

nagement • aviation • invasive species • water management • ecological forecasting • homeland security • air quality • carbon management • energy mana

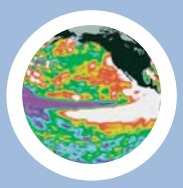
Forecasts

carbon cycle and ecosystems

atmospheric composition

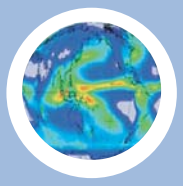


climate variability and change



earth surface and interior

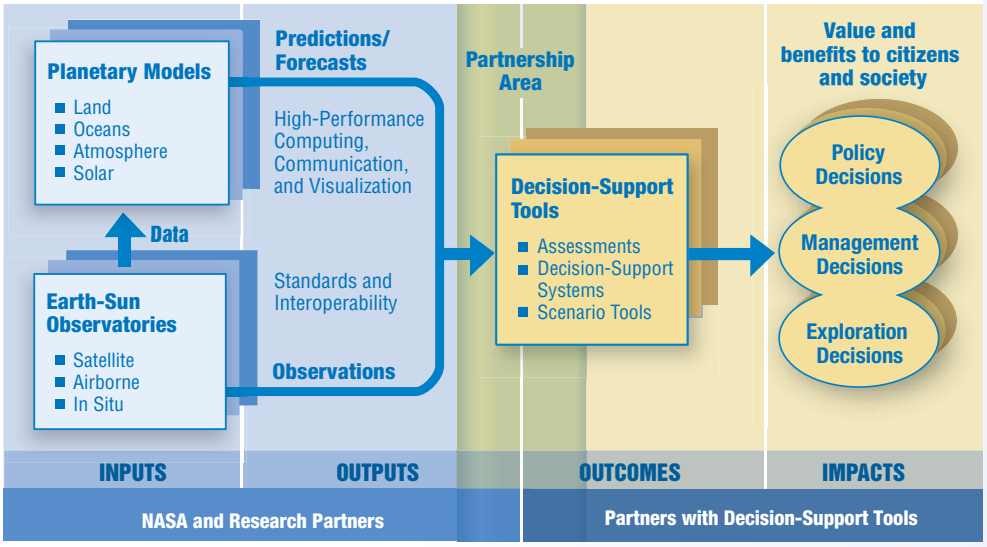
water and energy cycle



weather

sun solar system

Applied Sciences Program Approach to Integrated System Solutions



NASA partners with agencies and organizations on twelve applications of national priority that can benefit from the results of NASA aerospace research and development. The outcomes of these partnerships are manifest in enhanced decision-support and projected impacts include significant socio-economic benefits for each of the national applications.

National Application	Partner Organizations	Decision-Support Systems
Agricultural Efficiency	USDA,NOAA	CADRE—Crop Assessment Data Retrieval and Evaluation (USDA)
Air Quality	EPA,NOAA,USDA	CMAQ—Community Multiscale Air Quality Modeling System AIRNow AQI—Air Quality Index
Aviation	DOT/FAA,NOAA	NAS-AWRP—National Air Space-Aviation Weather Research Program
Carbon Management	USDA,DOE,NOAA	CQUEST—Support to the Energy Act of 1992,Section 1605b
Coastal Management	NOAA,EPA,NRL	HAB—Harmful Algal Bloom Bulletin/Mapping System CREWS—Coral Reef Early Warning System
Disaster Management	DHS/FEMA,NOAA,USGS,USFS	AWIPS—Advanced Weather Interactive Processing System HAZUS-MH—Hazards U.S.—Multi-Hazards
Ecological Forecasting	USAID,NOAA,NPS,CCAD,USGS	SERVIR—Regional Visualization and Monitoring System
Energy Management	DOE,UNEP,NOAA,NRC	RETScreen—Energy Diversification Research Laboratory (CEDRL) NEMS—National Energy Modeling System
Homeland Security	DHS,USGS,NOAA,NGA,DOD	IOF—Integrated Operations Facility IMAAC—Interagency Modeling and Atmospheric Assessment Center
Invasive Species	USGS,USDA,NOAA	ISFS—Invasive Species Forecasting System
Public Health	NIH,CDC,DOD,EPA	PSS—Plague Surveillance System EPHTN—Environmental Public Health Tracking Network MMS—Malaria Monitoring and Surveillance RSVP—Rapid Syndrome Validation Project
Water Management	EPA,USDA,USGS,BoR	RiverWARE—Bureau of Reclamation decision-support Tool AWARDS—Agricultural Water Resources and decision-support Tool BASINS—Better Assessment Science Integrating Point and Nonpoint Source